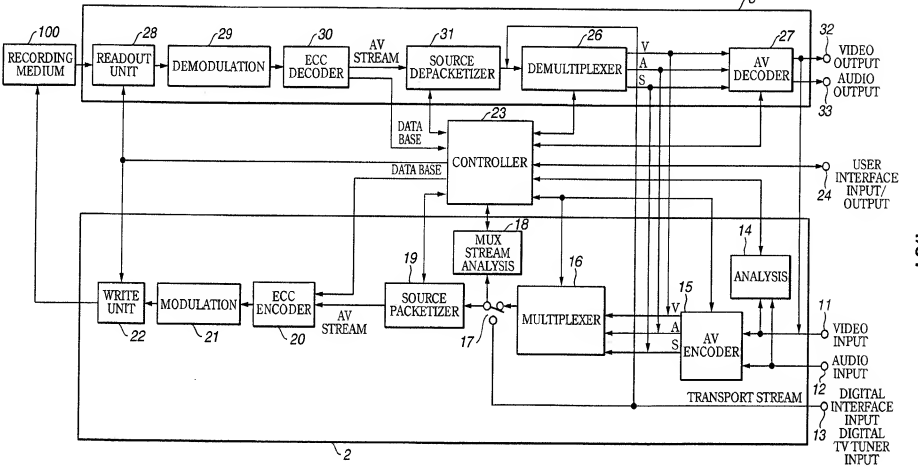


FIG.1

10/018682

EAST Version: 2.0.3.0

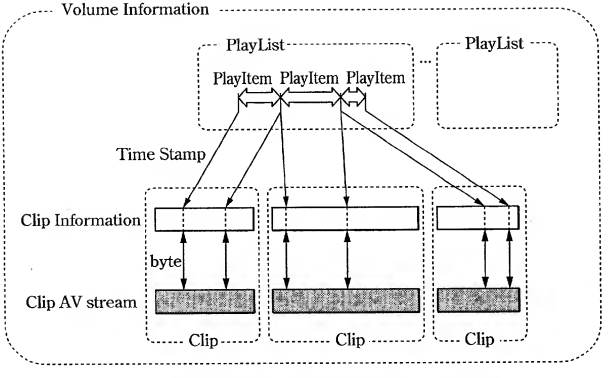


FIG.2

SUBSTITUTE SHEET (RULE 26)

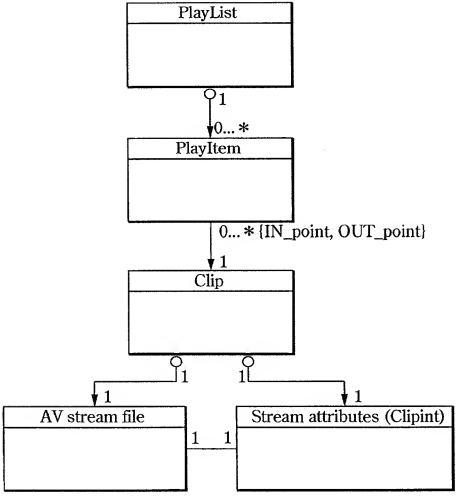


FIG.3

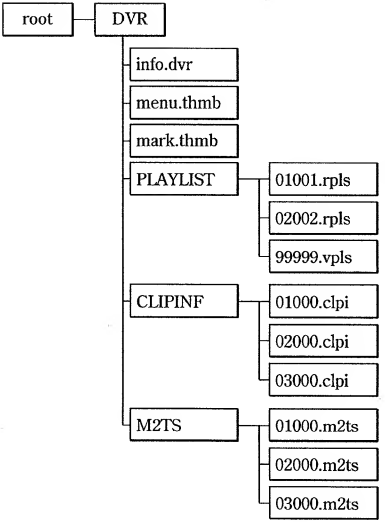

root
DVR
info.dvr
menu.thmb
mark.thmb
PLAYLIST
01001.rpls
02002.rpls
99999.vpls
CLIPINF
01000.clpi
02000.clpi
03000.clpi
M2TS
01000.m2ts
02000.m2ts
03000.m2ts

FIG.4

SYNTAX	NUMBER OF BYTES	ABBREVIATION
info.dvr {		
TableOfPlayLists_Start_address	32	uimsbf
MakerPrivateData_Start_address	32	uimsbf
reserved	192	bslbf
DVRVolume()		
for (i=0;i<N1;i++){		
padding_word	16	bslbf
}		
TableOfPlayLists()		
for (i=0;i<N2;i++){		
padding_word	16	bslbf
}		
MakerPrivateData()		
}		

FIG.5

FOR EXAMINATION PURPOSES

SYNTAX	NUMBER OF BYTES	ABBREVIATION
DVRVolume(){		
version_number	8*4	bslbf
length	32	uimsbf
ResumeVolume()		
UIAppInfoVolume()		
}		

FIG.6

EFS: 10018682

SYNTAX	NUMBER OF BYTES	ABBREVIATION
UIAppInfoVolume(){		
character_set	8	bslbf
name_length	8	uimsbf
Volume_name	8*256	bslbf
reserved	15	bslbf
Volume_protect_flag	1	bslbf
PIN	8*4	bslbf
ref_thumbnail_index	16	uimsbf
reserved	7	bslbf
rp_info_valid_flag	1	uimsbf
rp_ref_to_PlayList_file_name	8*10	bslbf
rp_ref_to_PlayItem_id	16	uimsbf
rp_time_stamp	32	uimsbf
}		

FIG.7

SYNTAX	NUMBER OF BYTES	ABBREVIATION
TableOfPlayLists(){		
version_number	8*4	bslbf
length	32	uimsbf
number_of_PlayLists	16	uimsbf
for (i=0; i<*number_of_PlayLists*; i++){		
PlayList_file_name	8*10	bslbf
UIAppInfoPlayList2()		
}		
}		

FIG.8

SYNTAX	NUMBER OF BYTES	ABBREVIATION
UIAppInfoPlayList2(){		
character_set	8	bslbf
name_length	8	uimsbf
PlayList_name	8*256	bslbf
reserved	8	bslbf
record_time_and_date	4*14	bslbf
reserved	8	bslbf
duration	4*6	bslbf
valid_period	4*8	bslbf
maker_id	16	bslbf
maker_code	16	bslbf
reserved	11	bslbf
playback_control_flag	1	bslbf
write_protect_flag	1	bslbf
is_played_flag	1	bslbf
archive	2	bslbf
ref_thumbnail_index	16	uimsbf
reserved	7	bslbf
rp_info_valid_flag	1	uimsbf
rp_ref_to_PlayItem_id	16	uimsbf
rp_time_stamp	32	uimsbf
reserved_for_future_use	240	bslbf
}		

FIG.9

SYNTAX	NUMBER OF BYTES	ABBREVIATION
zzzzz.clpi {		
STC_Info_Start_address	32	uimsbf
ProgramInfo_Start_address	32	uimsbf
CPI_Start_address	32	uimsbf
ClipMark_Start_address	32	uimsbf
MakerPrivateData_Start_address	32	uimsbf
reserved	96	bslbf
ClipInfo()		
for (i=0;i<N1;i++){		
padding_word	16	bslbf
}		
STC_Info()		
for (i=0;i<N2;i++){		
padding_word	16	bslbf
}		
ProgramInfo()		
for (i=0;i<N3;i++){		
padding_word	16	bslbf
}		
CPI()		
for (i=0;i<N4;i++){		
padding_word	16	bslbf
}		
ClipMark()		
for (i=0;i<N5;i++){		
padding_word	16	bslbf
}		
MakerPrivateData()		
}		

FIG.10

SYNTAX	NUMBER OF BYTES	ABBREVIATION
ClipMark(){		
version_number	8*4	bslbf
length	32	uimsbf
number_of_Clip_marks	16	uimsbf
for (i=0; i<*number_of_Clip_marks*; i++){		
reserved	8	bslbf
mark_type	8	bslbf
mark_time_stamp	32	uimsbf
STC_sequence_id	8	uimsbf
reserved	24	bslbf
character_set	8	bslbf
name_length	8	uimsbf
mark_name	8*256	bslbf
ref_thumbnail_index	16	uimsbf
}		
}		

FIG.11

EDITED COPY

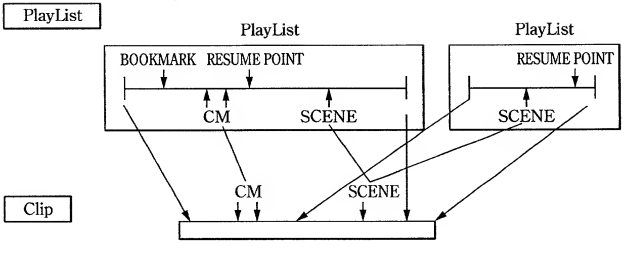


FIG.12

COPY FURNISHED

SYNTAX	NUMBER OF BYTES	ABBREVIATION
xxxxx.rpls / yyyyy.vpls {		
PlayListMark_Start_address	32	uimsbf
MakerPrivateData_Start_address	32	uimsbf
reserved	192	bslbf
PlayList()		
for (i=0;i<N1;i++){		
padding_word	16	bslbf
}		
PlayListMark()		
for (i=0;i<N2;i++){		
padding_word	16	bslbf
}		
MakerPrivateData()		
}		

FIG.13

SYNTAX	NUMBER OF BYTES	ABBREVIATION
PlayList(){		
version_number	8*4	bslbf
length	32	uimsbf
PlayList_type	8	uimsbf
CPI_type	1	bslbf
reserved	7	bslbf
UIAppInfoPlayList()		
number_of_PlayItems // main path	16	uimsbf
if (<*Vertual PlayList*>){		
number_of_SubPlayItems // sub path	16	uimsbf
}else{		
reserved	16	bslbf
}		
for (*PlayItem_id=0;* *PlayItem_id*<*nymber_of_PlayItems;* *PlayItem_id*++){		
PlayItem() //main path		
}		
if (<*Virtual PlayList*>){		
if (CPI_type==0 && PlayList_type==0){		
for (i=0; i<*number_of _SubPlayItems*; i++)		
SubPlayItem() //sub path		
}		
}		
}		

FIG.14

SYNTAX	NUMBER OF BYTES	ABBREVIATION
PlayItem(){		
Clip_information_file_name	8*10	bslbf
reserved	24	bslbf
STC_sequence_id	8	uimsbf
IN_time	32	uimsbf
OUT_time	32	uimsbf
reserved	14	bslbf
connection_condition	2	bslbf
if (<Virtual PlayList>){		
if (*connection_condition=='10'*){		
BridgeSequenceInfo()		
}		
}		
}		

FIG.15

SYNTAX	NUMBER OF BYTES	ABBREVIATION
PlayListMark(){		
version_number	8*4	bslbf
length	32	uimsbf
number_of_PlayList_marks	16	uimsbf
for (i=0;i<*number_of_PlayList_marks*;i++){		
reserved	8	bslbf
mark_type	8	bslbf
mark_time_stamp	32	uimsbf
PlayItem_id	8	uimsbf
reserved	24	uimsbf
character_set	8	bslbf
name_length	8	uimsbf
mark_name	8*256	bslbf
ref_thumbnail_index	16	uimsbf
}		
}		

FIG.16

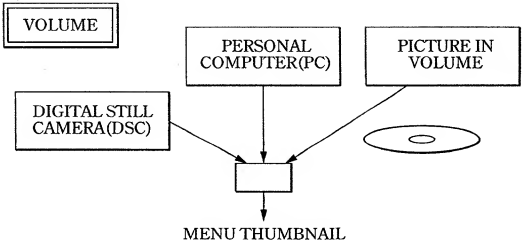

VOLUME
PERSONAL COMPUTER(PC)
PICTURE IN VOLUME
DIGITAL STILL CAMERA(DSC)
MENU THUMBNAIL

FIG.17

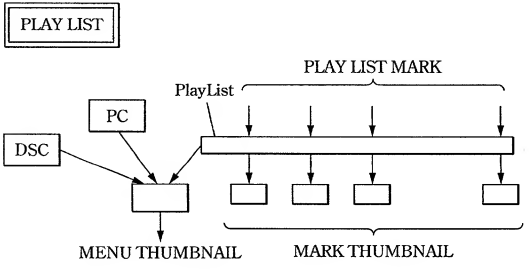

PLAY LIST
PLAY LIST MARK
PlayList
PC
DSC
MENU THUMBNAIL
MARK THUMBNAIL

FIG.18

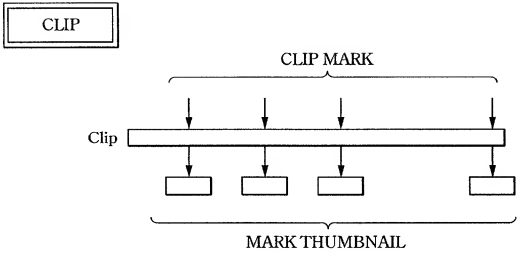

CLIP
CLIP MARK
Clip
MARK THUMBNAIL

FIG.19

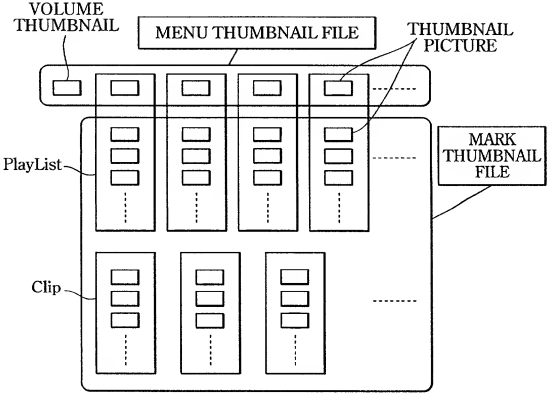

VOLUME THUMBNAIL
MENU THUMBNAIL FILE
THUMBNAIL PICTURE
MARK THUMBNAIL FILE
PlayList
Clip

FIG.20

SYNTAX	NUMBER OF BYTES	ABBREVIATION
menu.thmb/mark.thmb {		
reserved	256	bslbf
Thumbnail()		
for (i=0;i<N1;i++)		
padding_word	16	bslbf
}		

FIG.21

SYNTAX	NUMBER OF BYTES	ABBREVIATION
Thumbnail(){		
version_number	8*4	char
length	32	uimsbf
if (length !=0){		
tn_blocks_start_address	32	bslbf
number_of_thumbnails	16	uimsbf
tn_block_size	16	uimsbf
number_of_tn_blocks	16	uimsbf
reserved	16	bslbf
for (i=0; i<*number_of_thumbnails*; i++){		
thumbnail_index	16	uimsbf
thumbnail_picture_format	8	bslbf
reserved	8	bslbf
picture_data_size	32	uimsbf
start_tn_block_number	16	uimsbf
x_picture_length	16	uimsbf
y_picture_length	16	uimsbf
reserved	16	uimsbf
}		
stuffing_bytes	8*2*L1	bslbf
for(k=0; k<*number_of_tn_blocks*; k++){		
tn_block	fixed	
}		
}		
}		

FIG.22

Thumbnail_picture_format	MEANING
0x00	MPEG-2 Video I-picture
0x01	DCF (restricted JPEG)
0x02	PNG
0x03-0xff	reserved

FIG.23

FIG.24A

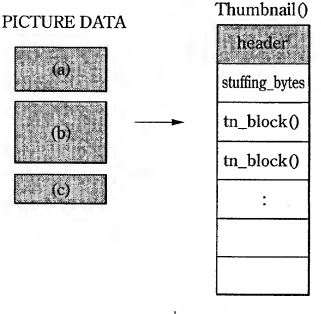
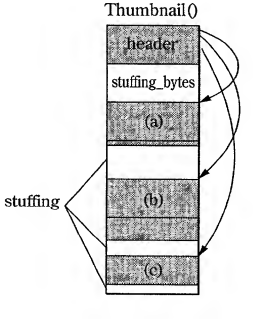


FIG.24B



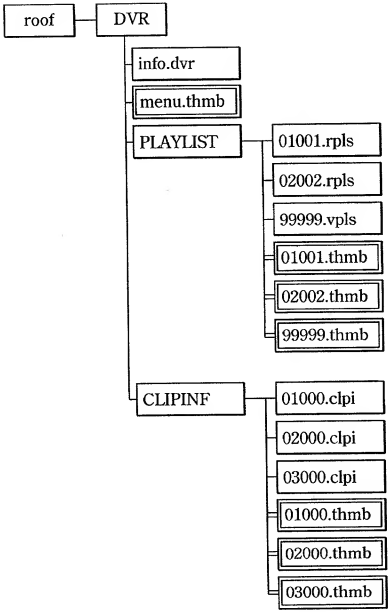

roof
DVR
info.dvr
menu.thmb
PLAYLIST
01001.rpls
02002.rpls
99999.vpls
01001.thmb
02002.thmb
99999.thmb
CLIPINF
01000.clpi
02000.clpi
03000.clpi
01000.thmb
02000.thmb
03000.thmb

FIG.25

SYNTAX	NUMBER OF BYTES	ABBREVIATION
menu.thmb/xxxxx.thmb {		
reserved	256	bslbf
Thumbnail()		
for (i=0;i<N1;i++)		
padding_word	16	bslbf
}		

FIG.26

SYNTAX	NUMBER OF BYTES	ABBREVIATION
TableOfPlayLists(){		
version_number	8*4	bslbf
length	32	uimsbf
number_of_PlayLists	16	uimsbf
for (i=0; i<*number_of_PlayLists*; i++){		
PlayList_file_name	8*10	bslbf
}		
}		

FIG.27

SYNTAX	NUMBER OF BYTES	ABBREVIATION
PlayList(){		
version_number	8*4	bslbf
length	32	uimsbf
PlayList_type	8	uimsbf
CPI_type	1	bslbf
reserved	7	bslbf
UIAppInfoPlayList()		
number_of_PlayItems // main path	16	uimsbf
if (<*Vertual PlayList*>){		
number_of_SubPlayItems // sub path	16	uimsbf
}else{		
reserved	16	bslbf
}		
for (*PlayItem_id=0;* *PlayItem_id<nymber_of_PlayItems;* *PlayItem_id++*){		
PlayItem() //main path		
}		
if (<*Virtual PlayList*>){		
if (CPI_type==0 && PlayList_type==0){		
for (i=0; i<*number_of _SubPlayItems*; i++)		
SubPlayItem() //sub path		
}		
}		
}		

FIG.28

10/018682

SYNTAX	NUMBER OF BYTES	ABBREVIATION
UIAppInfoPlayList(){		
character_set	8	bslbf
name_length	8	uimsbf
PlayList_name	8*256	bslbf
reserved	8	bslbf
record_time_and_date	4*14	bslbf
reserved	8	bslbf
duration	4*6	bslbf
valid_period	4*8	bslbf
maker_id	16	uimsbf
maker_code	16	uimsbf
reserved	11	bslbf
playback_control_flag	1	bslbf
write_protect_flag	1	bslbf
is_played_flag	1	bslbf
archive	2	bslbf
ref_thumbnail_index	16	uimsbf
reserved_for_future_use	240	bslbf
}		

FIG.29

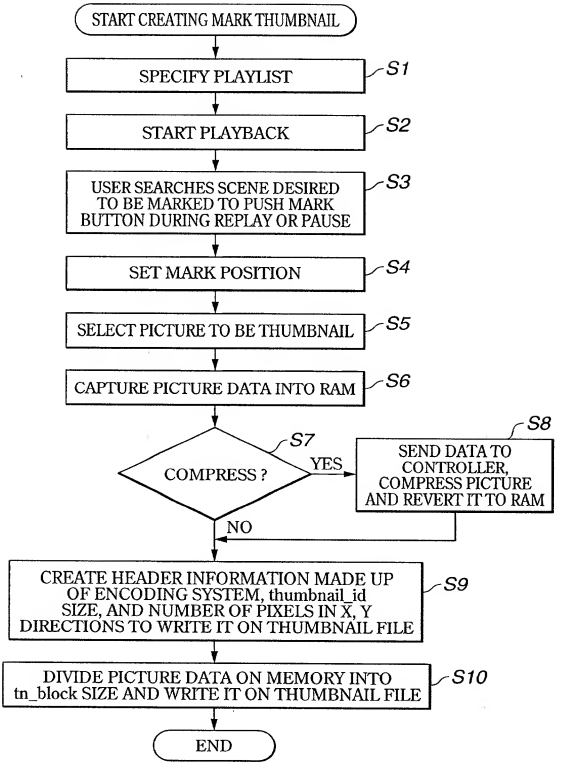

START CREATING MARK THUMBNAIL
SPECIFY PLAYLIST
S1
START PLAYBACK
S2
USER SEARCHES SCENE DESIRED TO BE MARKED TO PUSH MARK BUTTON DURING REPLAY OR PAUSE
S3
SET MARK POSITION
S4
SELECT PICTURE TO BE THUMBNAIL
S5
CAPTURE PICTURE DATA INTO RAM
S6
COMPRESS ?
S7
YES
SEND DATA TO CONTROLLER, COMPRESS PICTURE AND REVERT IT TO RAM
S8
NO
CREATE HEADER INFORMATION MADE UP OF ENCODING SYSTEM, thumbnail_id SIZE, AND NUMBER OF PIXELS IN X, Y DIRECTIONS TO WRITE IT ON THUMBNAIL FILE
S9
DIVIDE PICTURE DATA ON MEMORY INTO tn_block SIZE AND WRITE IT ON THUMBNAIL FILE
S10
END

FIG.30

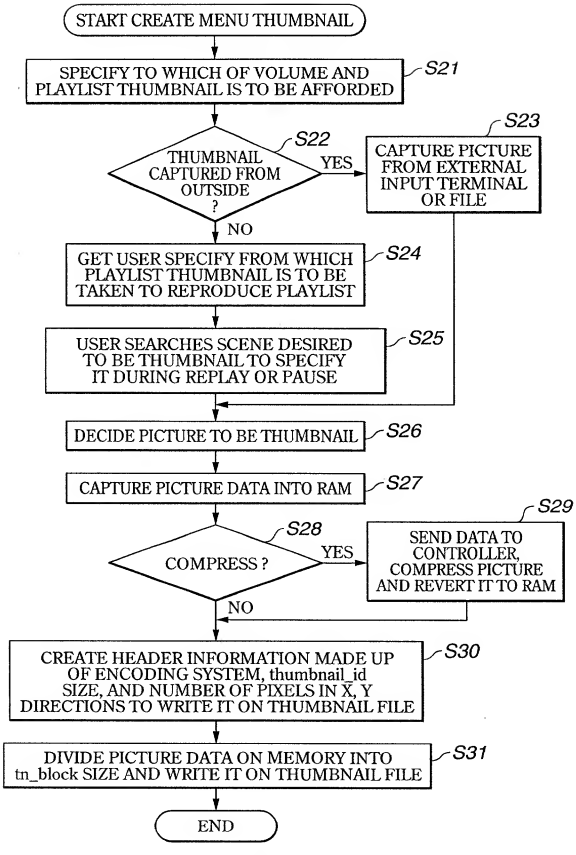

START CREATE MENU THUMBNAIL
SPECIFY TO WHICH OF VOLUME AND PLAYLIST THUMBNAIL IS TO BE AFFORDED
S21
THUMBNAIL CAPTURED FROM OUTSIDE ?
S22
YES
CAPTURE PICTURE FROM EXTERNAL INPUT TERMINAL OR FILE
S23
NO
GET USER SPECIFY FROM WHICH PLAYLIST THUMBNAIL IS TO BE TAKEN TO REPRODUCE PLAYLIST
S24
USER SEARCHES SCENE DESIRED TO BE THUMBNAIL TO SPECIFY IT DURING REPLAY OR PAUSE
S25
DECIDE PICTURE TO BE THUMBNAIL
S26
CAPTURE PICTURE DATA INTO RAM
S27
COMPRESS ?
S28
YES
SEND DATA TO CONTROLLER, COMPRESS PICTURE AND REVERT IT TO RAM
S29
NO
CREATE HEADER INFORMATION MADE UP OF ENCODING SYSTEM, thumbnail_id SIZE, AND NUMBER OF PIXELS IN X, Y DIRECTIONS TO WRITE IT ON THUMBNAIL FILE
S30
DIVIDE PICTURE DATA ON MEMORY INTO tn_block SIZE AND WRITE IT ON THUMBNAIL FILE
S31
END

FIG.31

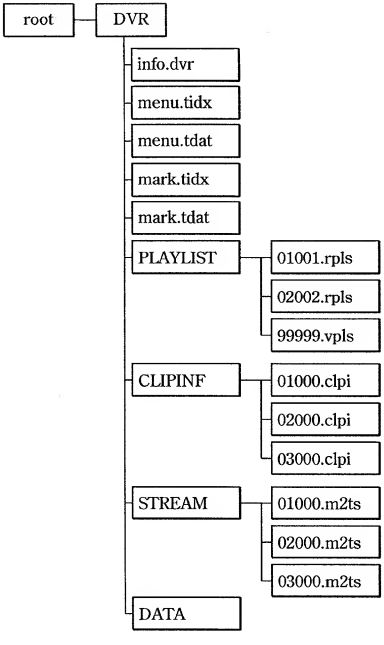

root
DVR
info.dvr
menu.tidx
menu.tdat
mark.tidx
mark.tdat
PLAYLIST
01001.rpls
02002.rpls
99999.vpls
CLIPINF
01000.clpi
02000.clpi
03000.clpi
STREAM
01000.m2ts
02000.m2ts
03000.m2ts
DATA

FIG.32

SYNTAX	NUMBER OF BYTES	ABBREVIATION
menu.tidx/mark.tidx(){		
version_number	8*4	char
reserved_for_future_use	256	bslbf
length	32	uimsbf
if (length !=0){		
number_of_thumbnails	16	uimsbf
tn_block_size	16	uimsbf
number_of_tn_blocks	16	uimsbf
for (i=0; i<*number_of_thumbnails*; i++){		
thumbnail_index	16	uimsbf
ref_to_tn_block_id	16	uimsbf
picture_byte_size	32	uimsbf
horizontal_picture_size	16	uimsbf
vertical_picture_size	16	uimsbf
display_aspect_ratio	4	uimsbf
color_space	4	uimsbf
reserved_for_word_align	8	bslbf
}		
}		
}		

FIG.33

display_aspect_ratio	MEANING
0, 1	reserved for future use
2	4:3 display aspect ratio
3	16:9 display aspect ratio
4-15	reserved for future use

FIG.34

display_aspect_ratio	MEANING
0	BT 709
1	ITU-R Rec.601
2-15	reserved for future use

FIG.35

SYNTAX	NUMBER OF BYTES	ABBREVIATION
menu.tdat/mark.tdat {		
for (*tn_block_id*=0; *tn_block_id*<*number_of_tn_blocks*; *tn_block_id*++){		
tn_block	tn_block_ size*1024*8	
}		
}		

FIG.36

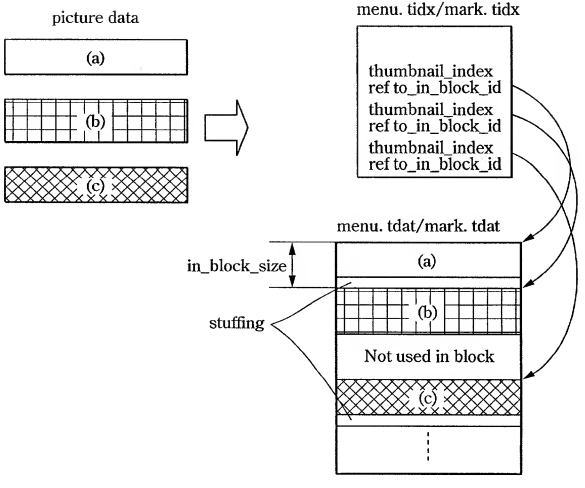

picture data
(a)
(b)
(c)
menu. tidx/mark. tidx
thumbnail_index
ref to_in_block_id
thumbnail_index
ref to_in_block_id
thumbnail_index
ref to_in_block_id
menu. tdat/mark. tdat
in_block_size
stuffing
(a)
(b)
Not used in block
(c)

FIG.37

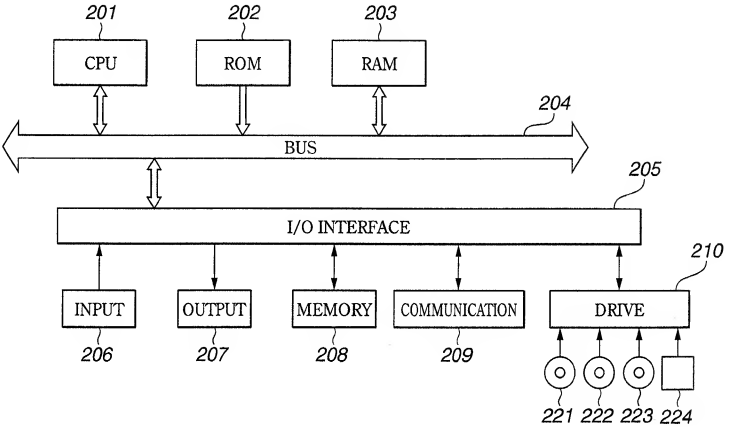

201
202
203
CPU
ROM
RAM
204
BUS
205
I/O INTERFACE
210
INPUT
OUTPUT
MEMORY
COMMUNICATION
DRIVE
206
207
208
209
221
222
223
224

FIG.38